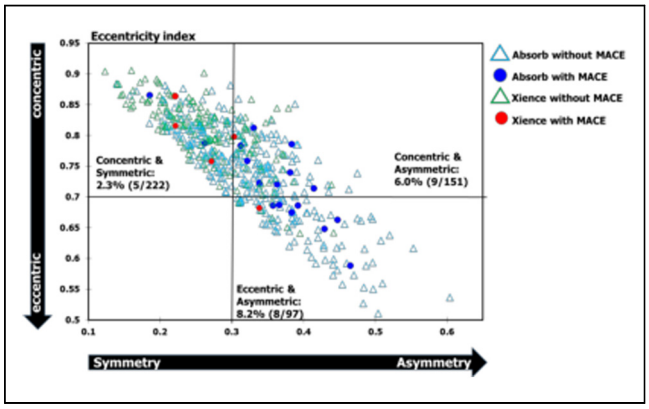

CONCLUSIONS In the ABSORB II randomized trial, the post procedural scaffold/stent area on IVUS was more eccentric and asymmetric in the Absorb arm than in the Xience arm. At 1 year, MACE tended to be observed more frequently in the lesions with high eccentricity and low symmetry for both, Absorb and Xience.

CATEGORIES IMAGING: Intravascular

KEYWORDS Bioabsorbable scaffolds, DES, IVUS

TCT-344

Abstract Withdrawn

TCT-345

Detailed Segmental Comparison Between a Dedicated Bifurcation Stent and Balloon Angioplasty Using Intravascular Ultrasound and Three-dimensional Quantitative Coronary Angiography: a Subgroup Analysis of the Tryton IDE Randomized Trial

Maik J. Grundeken,[1] Hector Manuel Garcia Garcia,[2] Maciej Lesiak,[3] Pieter R. Stella,[4] Imre Ungi,[5] Linn L. Laak,[6] Philippe Genereux,[7] Aaron Kaplan,[8] Martin Leon,[9] Joanna J. Wykrzykowska,[10] Yoshinobu Onuma,[11] Patrick W. Serruys[12]
[1]Academic Medical Center - University of Amsterdam, Amsterdam, Netherlands; [2]Thoraxcentrum, Erasmus MC, Rotterdam, Netherlands; [3]Poznan University of Medical Sciences, Poznan, Poland; [4]University Medical Center Utrecht, Utrecht, Netherlands; [5]University of Szeged, Szeged, Hungary; [6]Tryton Medical, Inc, Durham, NC; [7]Columbia University Medical Center, New York; [8]Geisel School of Medicine at Dartmouth, Lebanon, NH; [9]Cardiovascular Research Foundation, New York, United States; [10]Academic Medical Center - University of Amsterdam, Amsterdam, MI; [11]Thorax Center, Erasmus University, Rotterdam, Netherlands; [12]International Centre for Circulatory Health, NHL 1, Imperial College London, London, United Kingdom

BACKGROUND The Tryton Side Branch Stent™ (Tryton Medical, Durham, N.C), is a dedicated bifurcation bare-metal stent that, used in combination with a main branch drug-eluting stent (DES), was developed to improve outcomes and facilitate the treatment of bifurcations lesions.

METHODS The Tryton coronary bifurcation trial, including 704 patients, randomized patients in a 1:1 fashion to either a treatment strategy of main branch DES placement and side branch balloon angioplasty (SBBA), or a treatment with Tryton stent placement in combination with a main branch DES. The current data represents two pre-specified sub-studies: a 9-month intravascular ultrasound (IVUS) sub-study, primarily designed to investigate the occurrence of strut fractures, and a detailed segmental 9-month three-dimensional quantitative coronary angiography (3D-QCA) sub-study.

RESULTS Among the 704 patients enrolled in the Tryton trial, 159 (22.6%) and 190 (27.0%) patients were part of the pre-specified IVUS and 3D-QCA sub-group analyses, respectively. There were no differences in the main branch with regard to 9-month minimal lumen area (MLA) (5.33±1.37 in Tryton group vs. 5.69±1.72 mm2 in SBBA group, p=0.24) with low neo-intima area in both groups on IVUS. For the distal main branch, there were no differences between the treatment arms with regard the RVD, MLD and %DS on 3D-QCA (%DS: 13.32±12.67% vs 13.69±7.92%, p=0.84). Importantly, in the proximal main branch, there were also no differences between both treatment arms with regard to the RVD and MLD, resulting in low percent diameter stenosis in both treatment arms which were equal between groups (%DS: 9.85±7.19% vs 8.87±9.71%, p=0.50), suggesting the proximal Tryton with main branch DES overlap does not negatively influence the favorable healing of the DES. In the side branch, there was also no statistical significant difference in MLA between both groups (3.04±1.02 in Tryton vs. 3.46±1.15mm2 in SBBA, p=0.07). On 3D-QCA, no differences in minimal lumen diameter (MLD) and percentage diameter stenosis (%DS) were observed between both groups in the side branch (MLD: 1.34±0.043mm [Tryton] vs 1.45±0.31mm [SBBA], p=0.09). No complete strut fractures were observed within the Tryton treated side branches.

CONCLUSIONS From this pre-specified angiographic 3D QCA and ultrasound sub-analysis, the use of the Tryton bare-metal stent did not negatively impact the outcomes of the main branch DES. Similar results were found regarding the 9-month MLA and MLD of the side branch between the Tryton stent and the balloon angioplasty strategy. The IVUS SB analyzable subgroup however represents a relative small fraction of the intended study population and therefore selection bias may have occurred.

CATEGORIES IMAGING: Intravascular

TCT-346

Association between Increased Number of Septal Branches within the Myocardial Bridge and Abnormal Diastolic-Fractional Flow Reserve

Takumi Kimura,[1] Shigemitsu Tanaka,[1] Kozo Okada,[1] Hideki Kitahara,[1] Yuhei Kobayashi,[1] Yukari Kobayashi,[1] Vedant S. Pargaonkar,[1] Paul Yock,[1] Peter J. Fitzgerald,[1] Yasuhiro Honda,[1] Ian S. Rogers,[1] Jennifer A. Tremmel,[1] Ingela Schnittger[1]
[1]Stanford University of Medicine, Stanford, CA

BACKGROUND Recent studies have demonstrated that myocardial bridge (MB) can be one of the causes of ischemic chest pain, presumably attributable to hemodynamic disturbance in the affected coronary artery. Diastolic-fractional flow reserve (d-FFR) during dobutamine challenge has been shown to be useful to identify hemodynamic disturbance related to MB, but it remains unknown how the morphology of MB affects d-FFR. This study aimed to investigate possible association between MB-related IVUS parameters and d-FFR.

METHODS In 86 symptomatic MB patients with no significant obstructive epicardial stenosis, IVUS and d-FFR were evaluated in the left anterior descending arteries. MB was defined by IVUS as an echolucent muscle band (halo) partially surrounding the artery. In addition to minimum lumen area (MLA), MB-related IVUS parameters were assessed including total MB-length, the number of septal branches within the MB segment, arterial compression (% decrease in vessel area at systole), and halo (MB) thickness. Using a coronary pressure wire, d-FFR was measured at rest and during dobutamine challenge within and distal to MB. Abnormal d-FFR value was defined as ≤0.76 during dobutamine challenge within or distal to MB.

RESULTS Among the MB-related parameters, the number of septal branches within the MB (r=-0.314, p=0.0032) and total MB-length (r=0.245, p=0.0229) significantly correlated with d-FFR values with dobutamine challenge, while arterial compression weakly correlated with d-FFR at rest (r=-0.268, p=0.0209) (Figure). MLA and halo thickness were not significantly related to d-FFR during dobutamine challenge or at rest. Overall, abnormal d-FFR was found in 88% of the study patients. Stepwise multiple regression analysis revealed that the increased number of septal branches within the MB was independently associated with abnormal d-FFR values (r=-0.314, p=0.0032) among all the MB-related IVUS parameters studied.

CONCLUSIONS In patients with symptomatic MB, greater involvement of septal branches in the MB segment appears to lead to more hemodynamic disturbance during diastole, presumably accounting for heterogeneous presentation of dynamic ischemia among the MB patients. Combination of detailed anatomic and physiologic assessments may enhance our understanding of the exact role of MB in angina patients with no significant obstructive epicardial stenosis.